

CONFIDENTIAL

August 3, 1957

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To: [REDACTED]

From: C. L. Johnson

Subject: U-2 PROGRESS REPORT

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SP-1914  
T+P*

## 1. AIRPLANE STATUS

FOG Airplanes. The following airplanes have been delivered and are now on flying status with FOG.

361 6 December 56  
362 12 December 56  
363 23 July 56  
364 19 February 57  
365 6 February 57  
366 31 January 57  
368 4 April 57 ARDC  
369 4 June 57  
370 19 March 57  
371 4 April 57  
372 22 July 57  
373 3 May 57  
374 10 May 57  
375 22 July 57

DOCUMENT NO. 294  
NO CHANGE IN CLASS. ☒  
☐ DECLASSIFIED  
CLASS. CHANGED TO: TS S O  
NEXT REVIEW DATE: 2011  
AUTH: HR 70-2  
DATE: 10/14/81 REVIEWER: 008632

Note that 363 has been repaired and returned to FOG. It was originally delivered on 19 December 56. Airplane 367 is no longer a FOG article. It has been traded for a lower serial airplane as yet undetermined.

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FOG Airplanes 376 thru 382 are in flight test at the present time. The status of aircraft checking out specialized equipment is as follows.

Airplane 376 has been testing Radan and ASN-6. These installations in the last few days have been checking out very well on latitude and longitude checks from point to point. If Radan and ASN-6 continue to operate in a satisfactory manner this ship may be delivered the week of August 12th.

Airplane 367 which has been used for C Camera flight tests has been traded to the first group and is no longer available for the C Camera flight test work. Airplane 343 is being used for this program at present.

Airplane 377 is in flight test awaiting the receipt of the Stanley downward ejection seat for installation in the equipment bay. This seat and its related hatch is expected to be in flight test about August 15th at which time a downward ejection seat program will be initiated.

## 2. FLIGHT TEST PROGRAM

The anticipated flight test programs are shown on the attached chart.

### 3. STATE OF VEHICLE & COMPONENTS

Provisions for recording voice on the System I recorder are now incorporated in production and are ready on several articles with the exception that the voice filters are not yet available. These filters which will complete the voice systems are promised for delivery about September 16th, at which time complete kits can be sent out for all aircraft already delivered.

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An informal mockup conference was held to determine what type of ejection seat system would be desirable for the U-2. The following ejection seat provisions are to be made for the U-2 using a T2V aircraft production seat.

These provisions will be such that this seat can be readily removed and replaced with the present U-2 lightweight seat. The following features will be included on the ejection T2V seat to make it useable with the U-2.

1. Provide the foot stirrups presently installed on the T2V seat. These stirrups are readily removable in the field

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if they are not desired by the pilots.

2. A head guard mounted on the top of the seat will be provided to break open the canopy in cases where it has not been manually jettisoned prior to seat ejection. This feature has previously been proven on the T2V tests.
3. The control wheel will be snatched forward as the seat begins its upward travel in order to provide better clearance for the pilot's knees. This will be done by interlocking the seat and the elevator bell-crank which is behind the seat so that as the seat starts up, the wheel bangs forward and the elevator goes down.
4. The ejection sequence will be manual and will be initiated with a handle between the driver's legs. This handle of "D" ring is to have enough free travel to permit the ring to be clear of the driver's legs when the ejection procedure is started.

A parallel program to the ejection seat program should be accomplished on the seat packs. The seat pack modification will consist of the following items:

1. Use of a new seat pan (F-104) so that the pack will fit the T2V ejection seat without seat modifications. The U-2 oxygen equipment will fit in the F-104 seat pan in the same manner as it presently does in the U-2 pan.

2. By providing both right and left outlet holes for the oxygen hoses in the seat pan and a new, separate longer chest bladder hose this seat pack can be made so that it will work with pressure suits with either right or left side connections with the chest bladders.
3. Provisions should be made on the seat pack so that manual or automatic actuation of the Green Apple can be accomplished upon ejection of the seat.
4. All hoses into the seat pan are to be clipped solidly to the pan.

The present oxygen quick disconnect on the left hand side of the cockpit will be retained for the ejection seat. The only change to this disconnect is that it is to have an improved manual actuated lock which should be made retroactive to all aircraft whether they have ejection seat installations or not. No provisions are being made to automatically disengage the oxygen system upon ejection. The hose will simply pull loose from its connection at that time. This oxygen quick disconnect modification and the above seat pack modifications should probably be done by Firewel.

The above seat ejection items are to be incorporated as soon as possible into a prototype installation. This will be installed in a flight test article. There will be several ground fires to check the system operation and a method of

breaking open the canopy. After these tests we expect to build approximately 20 of these units for use in the U-2 during training and other non-critical operations.

Leading edge slipper tanks have been designed for the U-2 which carry 200 more gallons of fuel. The prototype tanks are presently installed on Airplane 351 but have not yet been flight tested. These tanks are expected to give an increase of about 10% overall range. These are designed to be installed on any existing U-2 but will require about a two week lay up to do so.

During service flights in the last year it has become apparent that the hydraulic system has been operating at higher temperatures than desired. This has resulted in a gradual service breakdown of "O" rings, seals and pumps. To correct this, a hydraulic radiator has been designed and is now installed in production airplanes and is to be retrofitted by kits to all existing aircraft. These kits are available in the month of August.

#### 4. SPECIAL EQUIPMENT

The Radan and ASN-6 combination presently flying in Article 376 has been operating fairly satisfactorily and has been checking latitude and longitude on short legs on the order of 100 miles. The ground speed has been found to be in error by approximately 3%. This has been calibrated and

it is hoped that future flights will give the 1% guarantee.

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The C Camera is still undergoing flight test work although it is apparently reaching a point where it may be used operationally. Mechanically and electrically it appears to be working satisfactorily but the optical definition leaves much to be desired. It is felt that this C Camera has been improved about as far as possible with the present glass installed. Tests to be conducted during the week of August 5th should terminate the tests on this particular camera at the present time. C Camera tests are not expected to begin again until a new unit is available in October.

B Camera tests have been put off because of higher priority work in flight test but it appears that the work load should permit B test work to begin on approximately a two flight a week basis starting on August 12th.

System IV has been working satisfactorily and requires two more flights, one short and one high, to make it ready to go. The most recent problem with this system was overheating of a recording camera. This has been cured now and the system should be operational shortly.

Rotating beacons have been requested to be installed on both top and bottom of the aircraft. These are being provided in kits and will be available about August 26th.

#### 5. TECH DATA

We are shipping to you the remaining Erection and Maintenance manuals and sets of blue-line drawings for which we have contracted with you. The enclosed Tech Data Disbursement" chart, attached hereto, indicates the overall status of the Tech Data that we are supplying to you.

The last shipment leaving consists of:

1. Erection and Maintenance Manuals - 27 copies serialized 113 through 139.
2. Blue-line drawings - four sets revised and up-to-date, as of August 8, 1957.
3. Revised blue-line drawings for inclusion in the two sets of drawings previously sent. Revision covers time period May 22, 1957 through August 8, 1957.



4. Drawing number books - 6 copies revised as of August 8, 1957.

Note that there are twenty-nine Erection and Maintenance Manuals already in your possession which are serialized on the flyleaf with numbers 361-56-6694 through 389-56-6722. These particular manuals are assigned to each aircraft bearing the same serial number. In addition, there are now the thirty-nine extra copies requested by you which have been serialized 101 through 139.

Future Erection and Maintenance manual changes, as they occur, will be sent to you in the form of Service Bulletins for distribution to the various holders of the manuals. Each bulletin will contain the revised sheets and will bear the serial number of the manual which is to be revised.

The six sets of blue-line drawings are simply serialized #1 through #6. These also will, in the future, be kept up-to-date by the same Service Bulletin System. The revisions for set #1 and #2 in this present shipment, with their attached Service Bulletin, indicate how these will be sent to you.

We still owe you a set of brown-line, reproducible drawings which we are holding back in order to give you the most up-to-date set possible. This will be sent to you as late as possible or sooner if you need it.

With regard to the remaining tech data shown on the chart we will give you the rest of the "Flight Handbooks" this month. The "Autopilot Maintenance" manual is now being printed and all copies will be sent to you early in September. "Weight Handbooks", of course, will continue to be delivered with each article.

The above summarizes the Tech Data status and indicates that we should be substantially complete early in September. From then on we will just have to keep you up-to-date via Service Bulletins.

*Kelly*

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Approved For Release 2002/08/07 : CIA-RDP81B00878R000100030019-3

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TOTAL REQ'D

19 20 21 22 23 24 25 26 27 28 29

68 E &amp; M MANUAL ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓

29 WEIGHT HANDBOOK ✓ ✓ ✓

— PILOT HANDBOOK

68 AUTOPILOT OPER ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓

68 AUTOPILOT MAINT

MA-1 COMPASS ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓

SEXTANTY OPER ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓

ARZ-6 OPERATOR ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓

ARZ-34 OPERATOR ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓

120 FLIGHT HANDBOOK

PRINT SEYS

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